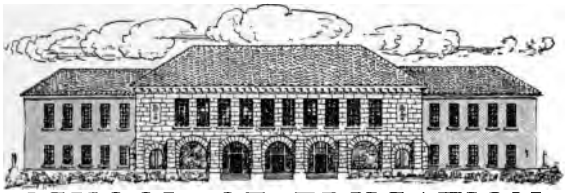
PHYSIOLOGY
FOR
LITTLE FOLKS



PHYSIOLOGY FOR LITTLE FOLKS

A REVISED EDITION

OF

CHILD'S BOOK OF HEALTH

IN EASY LESSONS FOR SCHOOLS

BY

ALBERT F. BLAISDELL, M.D.

AUTHOR OF "OUR BODIES, AND HOW WE LIVE," AND "HOW TO KEEP WELL"

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REVISED EDITION
OF

PHYSIOLOGY FOR LITTLE FOLKS

A PRIMARY LESSON BOOK.

THIS book has been examined, and found to contain a full and fair treatment of the nature and effects of alcoholic drinks and other narcotics in connection with relative physiology and hygiene, expressed in language which pupils of the grade for which it is designated can comprehend. We therefore cheerfully recommend it for use as a primary lesson book.

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PREFACE

THIS little book speaks for itself. It aims to present, in a manner interesting and intelligent to the youngest reader, the simplest facts about our bodily life. The book is simple and terse in its wording, familiar and suggestive in its style. Its aim is to interest and stimulate little folks to learn a few things about every-day matters of health.

The author believes that the real object in studying physiology in the lower grades of schools is to teach young people how to keep well and strong. Hence, special emphasis has been laid, in the several lessons of this book, upon such points as pertain to the personal care of health.

Special reference has been made to the evil nature and effects of alcoholic drinks, tobacco, and other narcotics, because the use of these injures health and character, and shortens life.

The teacher must not rest content with merely having the pages of the text read. Each and every topic in this book should be more fully explained and illustrated, and the facts fastened in the pupil's

memory. Interesting material from other sources, simple experiments, blackboard sketches, writing lessons upon the blackboard and slate, should supplement the use of the text-book.

ALBERT F. BLAISDELL.

PROVIDENCE, R.I., April, 1886.

PREFACE TO THE REVISED EDITION

THIS book has been thoroughly revised. Four new chapters on the subject of alcoholic drinks and other narcotics have been added.

In the preparation of this new edition, the author and publishers are under deep obligations to Mrs. Mary H. Hunt, the Superintendent of the Department of Scientific Instruction of the National Woman's Christian Temperance Union, and the Advisory Board Committee of the same, who have carefully revised the work.

A. F. B.

MARCH, 1891.

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THE CHILD'S BOOK OF HEALTH.

LESSON I.

WHY WE SHOULD TRY TO KEEP WELL.

DID your father or mother ever give you a pretty watch? If so, you know what pains you took to learn how to take good care of it. You were told when and how to wind it. You opened it, perhaps, and learned a few things about the wheels and springs. If you took good care of it, you found, even after you had carried the watch for several years, that it was not a bit the worse for use.

Now, your own body, the house in which you live, is in many things like a beautiful machine, like a watch or a steam-engine for instance,—with many parts, both inside and outside of it, that need your best care. The Creator has given this most perfect machine into your keeping. Whether it goes well

or ill, depends very much upon the care you take of it.

Now, you must know that your watch will keep better time if you learn something about its inside works, wind it up regularly, and keep it clean and neat. So if we understand the use of the different parts of our bodies, such as the stomach, the lungs, the heart, and the skin, we can take better care of them.

You will enjoy much better health if you begin, even while quite young, to learn a few things about this wonderful body of yours. We cannot be ill without giving trouble to those with whom we live, and causing them expense and loss of time. We can prevent a great deal of sickness, if we learn to watch carefully over our health.

Even children may learn many things about the health of their own bodies. As they grow older, they will be encouraged to keep on with this study. While you are boys and girls you can easily learn and remember many simple but important matters of every-day health. There is much more to learn as you grow older. After you have read all that is

told you in this little book, we hope you will be glad to learn more from some larger book.

You must not be content with simply reading what there is in any book. You can make your

A Lesson from the Blackboard.

slate and the blackboard help you to make this study as interesting as a picture-book. Learn to use your pencil and the crayon so that you can

draw little pictures, however simple and crude, of important parts of "the house you live in." Read over and over again the health hints written for you on the blackboard, until you come to know them as you do the pictures of your reading-book. Your teacher will tell you how to make many simple experiments: try them for yourself, and think how you can perform others without any one's help.

LESSON II.

THE GENERAL BUILD OF THE BODY.

IF you were going to buy a house, you know you would take a general view of it before you looked inside. You would notice its build as a whole, whether it was a three-story house or a cottage, whether it was painted white or brown, whether its roof was shingled or covered with slate; and so on.

So it is with the study of our body: if we would learn how to take care of it, we must have some general idea of its build. It will also help you to understand what is told you in the following lessons.

If you look at your body, you will see that it is made up of a middle or barrel-shaped part which you may call the trunk. Above this is a kind of round ball, called the head. The limbs, meaning the two arms and the two legs, are attached to the upper and lower corners of the trunk.

Now, your body is covered with a tight-fitting

or outside garment. Pinch this outside covering of your hand, and see how soft it is, and how nicely it fits. This, you know, is the skin. If you could look underneath, you would find red flesh. This is the same as the beefsteak we see in the market. We call it muscle.

Pinch your fingers tight around your arm or knee, and you will find something firm and hard. These hard parts are the bones. They make up the framework or skeleton of our bodies. The most important parts of the body are in the trunk. Suppose the front part of the body could be opened, like the door of a book-case, and you could look inside, what would you see?

Why, you would see a fleshy arch dividing the inside of the trunk into two parts, like a two-story house. The room up-stairs, called the chest, holds the heart and the lungs. The room down-stairs, called the abdomen, holds the stomach, bowels, liver, and other vital parts. The wall between the two rooms is called by a long name, — the diaphragm, meaning a kind of fence.

LESSON III.

WHAT THE BONES ARE USED FOR.

WHEN a carpenter builds a house, he makes the frame first, and then raises it. Now, animals as well as houses must also have some kind of a frame to give their bodies shape. This frame-work in most animals is made of a hard substance called bone.

The frame of our bodies — the houses we live in — is made of bones. The flesh and skin are put on them as the carpenter puts boards, shingles, and plaster on the frame of a house.

Is this all that bones are good for? No, indeed. They serve many useful purposes. They keep the general shape of our bodily house. They also give support to the soft parts. If we had no bones, and we were only a mass of flesh, our legs would give way, and we should be crushed under our own weight.

Bones also protect vital parts. What keeps your

heart and lungs from getting crushed? Why, the ribs with their barrel-shaped cage of bones. What keeps the soft and delicate brain from harm? Why, the shell of bones called the skull.

What else are bones used for? Let me tell you. You will read pretty soon of the flesh or muscles of the body, by which we stand up and move easily. Now, the outside of the bones is fitted with sharp edges, little knobs and rough surfaces, to which the muscles themselves or their tapering ends are tied.

Again, little grooves and holes are dug in the solid bone to shelter tiny blood-vessels, and the delicate little nerves, the telegraph-wires of the body. In brief, we may think of the bones as a foundation upon which our bodily house is securely built.

LESSON IV.

A FEW THINGS ABOUT BONES.

HOW many bones do you think there are in your body? Let me tell you. There are about two hundred, and they are of various sizes and shapes. Taken together, they make what is called the skeleton. Of course you know how a picture of the skeleton looks.

Now, do not for one minute think that you must learn the names of all these bones. When you are older, you may wish to read about them some day from a larger book. Let me, however, tell you just a few things about some of the bones.

The skeleton, or bony frame-work of the house we live in (a house far more wonderful than any king's palace, for it can walk, and the walls are living), consists of the head, the trunk, and the limbs.

The bones of the head make a strong round shell, which you may have heard of as the skull. The top part is a kind of bony roof which holds the brain.

Let us see what this box of bone — the cupola of our bodily house — holds. Our eyes, with which we see; our ears, with which we hear; our mouth, into which we put our food; the nose, with which we smell; and then our brain. Indeed, it is a very precious box, we think.

What is meant by the trunk? You know what the trunk of a tree is. Well, like the tree, our trunk is the main part of the body. Let us think of its bones as the backbone, the ribs, and the hips. The backbone is a tapering pile of odd-looking bones, put one on top of the other. You can feel the little bony ridges, by running your fingers up and down the middle of the back.

The next time you see a fish on the table, notice the large middle bone. It is the fish's backbone. It will give you a fair idea of the way your own backbone is built. Look at a picture of the backbone. Can you guess what it looks like? Why, a caterpillar with its head half raised, as it crawls on the ground.

Did you ever try to count your ribs? Well, it is not so easy as you may think to find twelve on

each side. They start from the backbone, and bend round your chest somewhat like the hoops of a barrel. Press both hands on your side, take a long breath, and you will feel the ribs move.

Every child knows how to rest the hands on his hips, the two strong bones which are the sills of our bodily house. There is a deep pit on the outer side of each of them, as large as a toy china teacup, into which the round head of the thigh-bone fits.

LESSON V.

MORE ABOUT THE BONES.

WOULD you like to find your collar-bone? Run your fingers across the top of the chest, and there you will feel a slender bone. Put your hand on the back of your shoulder, where officers wear their epaulets: you will feel a bone which seems to dance with every movement of your arm. This is your shoulder-blade. The large bone of the arm fits into this, and goes to the elbow, where it meets the two bones of the fore-arm.

In your wrist you have eight little bones, wedged together like the cobble-stones of a pavement. Now come the bones of the hand, ending with the fingers. Just think of the wonderful things we do with our hands every day. How wonderful it is that the deaf and dumb talk with their hands, and the blind read with their fingers!

How useful are the legs to every part of the body! Without the bones in our legs, we could not stand

or walk. The strongest bone in the body, the thigh-bone, reaches to the knee. There are two bones in the leg below the knee.

Seven queer-shaped bones bound tightly together make your ankle. We have, you all know, ten toes, five on each foot. The foot as well as the hand can be made to do some wonderful things. Think of people who can write, eat, and handle tools with their toes.

Wouldn't you think that our bones would get dry and rub hard against each other? Well, they would, but they are put together with many curious hinges. Kind Nature oils the ends of the bones for us every day. This makes the rubbing parts move smoothly, and saves much wear and tear.

Perhaps you have seen a fireman oil the joints of his engine. He must do this every day, else his engine would soon be ruined. Think of a man who could build a machine that would run for many years, and keep its own joints oiled all the time.

What keeps the ends of the bones together? Why don't they slip out of place? Well, they would, but they are tied to each other by tough

cords and bands. You will find out when you are older, that it takes some skill to carve a turkey or a fowl, because you must cut round the tough gristly cords to get it apart neatly, and serve it out in pieces for the plate. Bend your finger rapidly, and see the cords move under the skin.

LESSON VI.

HOW TO TAKE CARE OF THE BONES.

THE bones of children are soft and easily bent, but they become harder as we grow older. The bones of old people are dry, hard, and brittle. You know that the bones of children often bend rather than break in the many tumbles they have; while the bones of very old people, being brittle, will snap like a pipe-stem with a very slight fall.

How often do we see on the street young children with legs bent like a bow! Too bad, isn't it? They have been allowed to stand alone and to walk before their bones were hard enough to bear up their bodies. So their bones bend, and make them bow-legged.

Will tight clothing ever change the shape of the bones? Certainly. It will not only crowd the bones out of place, and change their shape, but it will stop the free flow of blood. Now, the lungs, the heart, and the stomach, and other parts have just

enough room to do their work properly. If our clothing squeezes them into smaller space, it hinders these vital parts in their duty, and is very likely to do great harm to our health.

Proper Position while Studying at Desk.

It is much the same with the feet. How silly and hurtful is the habit of wearing short and narrow shoes and tight and high-heeled boots! Why so? Because the weight of the body pushes the foot for-

ward into the shoe, and the foot is crowded on the toes. This is apt to cause tender feet, corns, ingrowing nails, to say nothing of a stiff and ungainly gait.

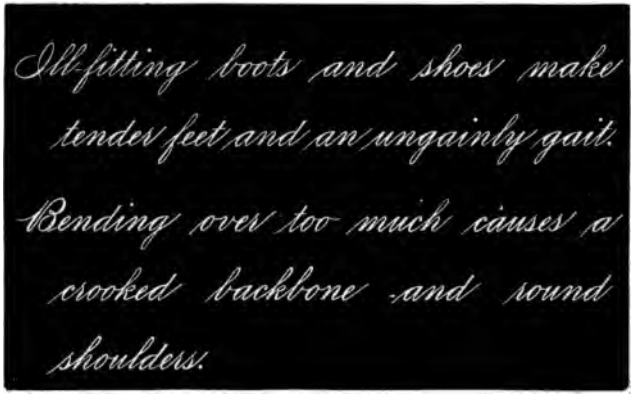
Proper Position while Standing to Read.

You must not get into the habit of bending over too much while at your reading or sewing. Almost before you think of it, you will have stooping shoulders. Your teacher will see to it that you have a seat and a desk at school of just the right size and height, so there will be no strain on your shoulders and back. While sitting in your school-desk, do not get into the habit of taking ungainly positions, such as sliding down into the seat, or sitting on the foot.

The desks should not be too low, thus causing a forward stoop; or too high, thereby throwing one shoulder up too much, and giving a twist to the

spine. If the seats are too high, the feet have no support; if too low, there is undue strain on the shoulder and backbone.

You must not think of the bones in your body as like the old bones you sometimes see. These are dead, and as dry and hard as a rock. The bright



Blackboard Work.

red blood runs through the living bones, and gives them a beautiful, pinkish tint.

Beer, wine, cider, and other alcoholic liquors make the blood less fit to feed the bones, and so do them harm. Tobacco is hurtful to young people; it stunts the growth of their bones.

OUTLINE FOR REVIEW.

THE BONY FRAME OF THE BODY.

1. *The bones are the framework of the body.*
2. *They give shape, support, and protection.*
3. *They are the foundation of our bodily house.*
4. *The skeleton and its two hundred bones.*
5. *The bones of the head, trunk, and limbs.*
6. *How bones may grow out of shape.*
7. *The ill effects of tight clothing, and of high-heeled boots and shoes.*
8. *Effect of unhealthy positions of the body upon the bones.*

TEST QUESTIONS FOR REVIEW.

1. What do you mean by the bony frame of the body?
2. What useful purposes do bones serve?
3. How many bones are there in the body?
4. What do you mean by the skeleton?
5. Tell what you can about the bones of the head.
6. What is meant by the trunk?
7. Tell what you can about the backbone.
8. Describe the collar-bone. The shoulder-blade.
9. What are the bones of the arm?
10. Describe the bones of the leg.
11. How are the bones joined to each other?
12. Show how the bones are tied to each other.
13. Why are some children bow-legged?
14. What is the effect of tight clothing on the bones?
15. Give some hints about wearing boots and shoes.
16. What may cause round shoulders and a curvature of the spine?
17. How do alcoholic liquors and tobacco injure the growth of the bones?

LESSON VII.

THE MUSCLES: HOW THEY DO THEIR WORK.

WHAT makes your arms, your face, and your shoulders so full and plump? Because they are covered with flesh. The flesh is called muscle. The muscles clothe the bony frame of the body.

What is a muscle? Why, it is simply a bundle of lean meat. When we eat beefsteak or mutton for dinner, we are eating muscle. What is the use of muscles? All the use in the world. They enable us to move, and walk from place to place. Our arms and legs are moved by muscles. Our bones, our fingers and toes, our mouth, our eyes, our heart, all are moved by muscles. Indeed, how could we do without them?

How many muscles have we in our body? Nearly five hundred. Muscles are of all kinds of shapes. Some are large, others very small; some are shaped like fans, others long and round; many are broad and flat, and taper at each end. In brief, muscles

vary in size and shape according to their place and the work they have to do.

How do muscles do their work? Let me tell you. If you'll take a piece of India rubber, and pull it out longer, you will see that it becomes thinner. When you let it go, it snaps back, and once more becomes short and thick. Now, our muscles are

Writing Lesson.

made in so wonderful a way, that they become shorter and thicker without being pulled by some one else, as a piece of rubber must be.

Every boy knows how to "try his muscle." As he bends his arm briskly up and down, he feels something on the front of his arm swell and grow hard. What is it? Why, it is a muscle at work;

and this work is called the contracting or shortening of a muscle. All muscles act in this way by contraction, but all muscles are not tied to bones.

Some of the muscles are fastened directly to the bones: others end in white, gristly cords. Bend your fingers to and fro, and you can see and feel the cords move on the back of the hand. These are the little ropes with which the muscles in the arm move the fingers. Children at Thanksgiving time often amuse themselves by pulling the white cords in the leg of a turkey, and seeing the toes move.

Why do you suppose so many of our muscles taper into these little ropes? Why, to save room, and allow our limbs to move easily. What a large and clumsy hand we should have, if all the muscles needed to move the fingers were in the hand instead of in the arm!

LESSON VIII.

EXERCISE, AND HOW TO TAKE IT.

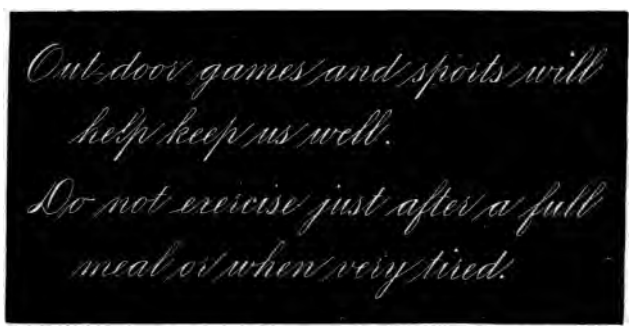
DID you ever notice what stout, strong arms a blacksmith has? Look at those big muscles, strong as iron chains, that swell out as he brings his hammer down on his anvil. What will you say to this? Why, simply this. If our muscles are much used, they grow stout and strong. If they are not used, they become smaller and dwindle away. Constant use, then, instead of wearing out the muscles, does them good.

Is this true of all our muscles? Certainly. So, then, walking, running, and jumping not only make our arms, legs, and back stronger, but also makes the blood flow faster through every part of our body. Exercise of this kind makes us breathe in more fresh air, and we get rid of more waste matter. It makes us warmer, and helps to digest our food.

What a good thing it is for boys and girls, that they are so fond of play! Rowing a boat, playing

croquet, games of base-ball, coasting,—all these sports will help you grow up into healthy men and women.

Walking is the best of all exercises. It takes us into the open air and the bright sunlight. Take a brisk walk every day, and you will never want for healthful exercise. The graceful gymnastic exercises used in many of our schools do much to give vigor to all parts of the body.



Blackboard Work.

What is the best time to take exercise? Certainly, not just after a full meal, for then the stomach is busily at work digesting the food. The evening is not the best time, because we are then tired enough to rest.

LESSON IX.

HOW ALCOHOL DOES HARM TO THE MUSCLES.

WHEREVER you have lived, especially if in a city, you have probably seen the unsteady and staggering gait of a person under the influence of strong drink. It is a sad but common sight.

What has happened, that the muscles, even of a strong man, if he has been using alcoholic liquor, are so little under his control? Let me tell you a little about it.

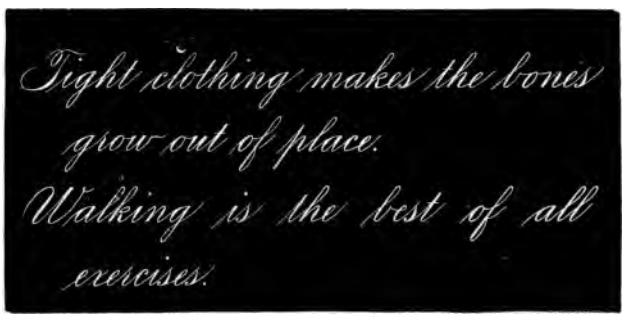
Alcohol is a peculiar poison, and acts upon the muscles in a peculiar way. The brain sends out its orders to the muscles, through the tiny white nerves, and then the muscles do as they are bid.

Now, alcohol weakens this nerve power which controls the muscles. They are no longer able to do the bidding of the brain. Let a skilled workman drink a certain amount of strong drink. He may know just how each tool should be used, but he finds himself using it in a very bungling manner.

The trained muscles become feeble and trembling, and are no longer under the control of the will.

Are all the muscles made weak in the same way? Certainly, though some drinks weaken them more than others.

Any drink that has alcohol in it is hurtful to the muscles.



Blackboard Work.

Let me tell you of one set of muscles, those of the tongue and throat. These muscles with which we speak are soon weakened by alcohol. Hence the drunken man talks thick, leaves out words, cuts them short, or puts them in the wrong place. Tobacco also weakens the muscles. No one who wants strong muscles should injure them with alcoholic drinks or tobacco.

OUTLINE FOR REVIEW.

HOW OUR BODIES ARE MOVED.

1. *Muscles described.*
2. *Explain the use and shape of muscles.*
3. *Show how they do their work.*
4. *Describe the cords and explain their use.*
5. *Effect of exercise on the muscles.*
6. *Various kinds of exercise.*
7. *The best time for exercise.*
8. *How alcohol affects the muscles.*

TEST QUESTIONS FOR REVIEW.

1. What do you mean by a muscle?
2. What do muscles enable us to do?
3. How many muscles are there in the body?
4. How do the size and shape of muscles vary?
5. What peculiar power do muscles have?
6. Illustrate this power of contraction by a piece of India-rubber.
7. Why do the muscles taper into slender cords?
8. What is the effect of use on the muscles?
9. Exercise. Why do we need it?
10. What are some of the good results of exercise?
11. Describe the different kinds of exercise.
12. Why is walking the best of all exercise?
13. What is the best time for exercise?
14. What is the effect of alcohol on the muscles?
15. How does alcohol affect the speech?

LESSON X.

A FEW FACTS ABOUT ALCOHOLIC LIQUORS.

WE have just been told that alcoholic liquors injure the growth of bones. In this little book we shall have a great deal to say about these same strong drinks. You must know that the evil nature of these drinks is due to the alcohol which they all contain.

Alcohol is a poison. A little poison will injure health; more will destroy life. Children, and some grown people, have been suddenly killed by drinking liquors that contain much alcohol. But more people have been injured, and more lives have been shortened, by the use of alcohol where it did not kill at once.

Alcohol is not found anywhere in nature, as we find water in springs and rivers. Where, then, does it come from?

When the juice of apples is squeezed out, it is sweet. We call it sweet cider. This new cider,

when it has stood in warm air for a short time, begins to "work," or ferment as it is called. But what causes it to do this? Some very tiny things called "ferments."

Now, you must know that ferments are much smaller than anything you have ever seen with your naked eye, and they float around in the air like dust. But they are smaller than the finest speck of dust you ever saw floating in a ray of sunshine.

Ferments are also on the skins and stems of apples. They cannot get inside while the skin is unbroken; but when the apples are ground up to make cider, these ferments and others from the air get into the juice that is pressed out. You say, "If they are so very small, what harm can they do?" A great deal. They change a good fruit juice to a poisonous drink. Let us see how they do this.

The juice that comes from apples is sweet because sugar formed in it while the apples were growing and ripening. When the juice is squeezed out, the ferments cause this sugar to decay, or go to pieces, and two other substances take its place.

One is a gas that you can see bubbling up out

of the juice after it has stood a few hours. The other is alcohol, that remains in the juice, and makes the cider a poisonous drink.

Now, it is the nature of alcohol to make those who drink any liquor containing it want more and more. This is one reason why alcohol makes such liquors as wine, beer, or cider, dangerous drinks.

You can drink milk without fear that it will make you want to drink milk all the time; but no one can tell, when he begins to drink alcoholic liquors, how soon he may have such a craving for them that it will be very hard for him to let them alone.

LESSON XI.

MORE ABOUT ALCOHOLIC LIQUORS.

THE juice of grapes is often pressed out to make wine. Ferments are on the skins of grapes and other fruits, as well as on apples. When the grape juice is pressed out, the ferments get in it and quickly begin to change the sugar to alcohol.

Grapes, as you know, are good for us to eat, and their juice when first pressed out is good for us to drink; but when it has stood a few hours in a warm air, and the ferments have begun to change its sugar to alcohol, it is no longer healthful, but poisonous. It is the nature of the alcohol in this wine to make any one who drinks it form such a liking for it that he may become a drunkard.

You should never drink wine, because there is alcohol in it. Wine has made many drunkards.

The juice of currants, raspberries, elderberries, and other fruits, is sometimes pressed out to make

of the juice after it has stood a few hours. The other is alcohol, that remains in the juice, and makes the cider a poisonous drink.

Now, it is the nature of alcohol to make those who drink any liquor containing it want more and more. This is one reason why alcohol makes such liquors as wine, beer, or cider, dangerous drinks.

You can drink milk without fear that it will make you want to drink milk all the time; but no one can tell, when he begins to drink alcoholic liquors, how soon he may have such a craving for them that it will be very hard for him to let them alone.

LESSON XI.

MORE ABOUT ALCOHOLIC LIQUORS.

THE juice of grapes is often pressed out to make wine. Ferments are on the skins of grapes and other fruits, as well as on apples. When the grape juice is pressed out, the ferments get in it and quickly begin to change the sugar to alcohol.

Grapes, as you know, are good for us to eat, and their juice when first pressed out is good for us to drink; but when it has stood a few hours in a warm air, and the ferments have begun to change its sugar to alcohol, it is no longer healthful, but poisonous. It is the nature of the alcohol in this wine to make any one who drinks it form such a liking for it that he may become a drunkard.

You should never drink wine, because there is alcohol in it. Wine has made many drunkards.

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You should never drink wine, because there is alcohol in it. Wine has made many drunkards.

The juice of currants, raspberries, elderberries, and other fruits, is sometimes pressed out to make

what are called "home-made wines." But if these juices are allowed to ferment, they will contain alcohol, and should never be drank.

Liquors containing alcohol may be made from dry grains. Grain contains starch. By moistening the grain, and keeping it warm, the brewer can make this starch turn to sugar. He then grinds the grain, and puts it in water to soak out the sugar. To make this sweet liquor ferment, the brewer puts in yeast, which contains ferments much like those on fruit and in the air.

These ferments change the sugar in the sweet grain liquid to alcohol and gas. The gas bubbles out into the air, and the alcohol remains in the liquid. The poisonous drink made in this way is called beer. The alcohol in beer has the power to make the one who drinks it keep wanting more and more beer, until beer no longer satisfies him, and he wants drinks that are stronger with alcohol.

Beer, wine, or cider will not make a boy manly. They will not help him either in his study, work, or play, but will make him dull and stupid and careless about doing right. They may make a drunkard of

him. No boy can afford to be made stupid or bad, or to run the risk of becoming a drunkard.

Beer is sometimes made at home by steeping roots and herbs, and causing them to ferment by adding yeast. Let no one think that such home-made beer is harmless, for it is not. Any sweet liquid made to ferment with yeast will contain alcohol, and any liquor that contains alcohol has power to harm by injuring the health, and by creating the craving for alcohol that leads to drunkenness.

Alcoholic liquors are real poisons both to the mind and to the body. They do more harm than war, pestilence, and famine. In other lessons you will be told more about them.

In the mean time, here is a golden text for you to remember all the days of your life: —

NEVER DRINK A DROP OF ALCOHOLIC LIQUOR.

OUTLINE FOR REVIEW.

ALCOHOL AND ALCOHOLIC LIQUORS.

1. *Alcohol: what it is; how it looks; where found.*
2. *Ferments: what they are; where found.*
3. *What do ferments do.*
4. *Effect of ferments on fruits and grains.*
5. *Wine: how made. Beer: how made.*
6. *Beer, wine, cider: effect on health.*
7. *Alcoholic liquors:*
   1. *Slow but sure poisons.*
   2. *Cause disease.*
   3. *Shorten life.*

TEST QUESTIONS FOR REVIEW.

1. What is alcohol?

2. What will a little poison do to the health? What will more do?

3. Has any one ever been suddenly killed by drinking alcoholic liquors?

4. What can you say of those who have been injured but not suddenly killed by these liquors?

5. Where do we find the water which nature prepares for us to drink?

6. Do we find alcohol thus prepared for us by nature?

7. What is the juice of apples called when squeezed out?

8. What does new cider do when it has stood in warm air for a short time?

9. What causes it to do this? Describe ferments.

10. Where are ferments found?

11. When do they get into apple juice?

12. What do ferments do to good fruit juice?

13. Why is the juice of apples sweet?

14. What do ferments do to the sugar in apple juice?

15. What two new substances take the place of the sugar?

16. What becomes of the gas? What becomes of the alcohol?

17. Why, then, is cider a poisonous drink?

18. What is it the nature of alcohol to do to those who drink any liquor containing it?

19. Why, then, is cider a dangerous drink?

20. Why is it more dangerous to drink liquors that have a little alcohol in them than to drink milk?

21. For what purpose is the juice of grapes sometimes pressed out?

22. What gets into grape juice when it is pressed out? What do they do?

23. What can you say of grapes and of grape juice when it is first pressed out?

24. What change do the ferments make in sweet grape juice?

25. What is it the nature of the alcohol in wine to do?

26. Why should you never drink wine?

27. What are "home-made" wines? What can you say of any fruit-juice that ferments are allowed to work in?

28. What liquors may be made from dry grain? What does grain contain?

29. How does the brewer turn the starch of grain to sugar?

30. How does he get a sweet liquor from the grain when he has ground it?

31. How does he make this sweet liquid ferment?

32. What do these ferments do to the sugar in the sweet grain liquid?

33. What can you say of the gas thus formed? What of the alcohol?

34. What name is given to the drink made in this way? Why is beer poisonous?

35. What has the alcohol in beer the power to do?

36. When beer no longer satisfies the drinker, what kind of drink does he want?

37. Will beer, wine, or cider make a boy manly? Will they help him in his study or work or play?

38. What will they do for him? Why can no boy afford to drink them?

39. What can you say of "home-made" beer?

40. What can you say of any sweet liquid made to ferment with yeast?

41. What can you say of any liquor that contains alcohol?

42. What can you say of the harm done by alcoholic liquors?

43. What is a golden text to remember about all alcoholic liquors?

LESSON XII.

WHY WE NEED TO EAT.

DID you ever think that our bodies are somewhat like a steam-engine? Well, they are. We move about, and are warm, because a fire is always burning inside of us. This fire, like that of the engine, needs fresh fuel, or it will go out.

Every part of an engine is, as you know, all the time wearing out. So it is with our bodies: we are all the time wearing out. Every step we take, every word we speak, wastes a little bit of our bodies.

Some of the things we do, as walking, jumping, talking, and so on, we easily notice. Many other things, such as the beating of the heart, and breathing, are not so plainly noticed; but they go on, even when we are asleep. In brief, we are working and wasting all the time.

Then, why don't we waste away? Well, we should if we did not do something else besides working

and wasting. You ate your dinner yesterday, didn't you? and your breakfast this morning? Certainly. This is the whole story. What we eat and drink takes the place of what is used up for the good of the body.

Can you see that the food you eat looks at all like your bones and flesh, of which it is to make a part? No, indeed. Perhaps you think the meat is somewhat like it; but how about potatoes, corn, butter, and eggs?

How do all these things at last turn into flesh, hair, and bones? Four words will tell you the secret. *The blood carries them.* You will read in another lesson that the blood brings away waste matter *from* every nook and corner of your bodily house, and also carries fresh nourishment *to* every part of it.

LESSON XIII.

THE FLESH-MAKING FOODS.

WHAT a great many different things we eat and drink! Is this the best way, or not? It is the very best way, as we shall soon see. We can easily put all the food that is good for us into three great classes.

First, we must eat certain kinds of food to make up for the waste of which you have just been told. You would like, wouldn't you, strong muscles in your legs, so you can run or walk a long way without being tired? You would like, we suppose, stout muscles in your arms, so you could easily lift a heavy weight or play base-ball.

What will do all this for us, and many more things too? Why, these same flesh-making foods. And why will they do it? Because they all contain a whitish substance called albumen. Think of the white of an egg, and then of albumen. They are both the same thing.

All the really living parts of our bodies are made mainly of this same whitish substance. So, then, you might well suppose that these vital parts must have a fresh supply, or they will wither and die.

A Lesson from the Blackboard.

What are some of these flesh-making foods that we should eat every day? Lean meat is a great flesh-maker, and so are pease and beans and the curd of milk. Bread is also a great flesh-maker.

LESSON XIV.

THE HEAT-GIVING FOODS.

WE have just read about foods which go to make new flesh and new bone. But we need to eat other food to keep us warm and enable us to do work. All sorts of foods that have sugar and starch and fat in them will do this for us.

You will think, perhaps, that all our sugar must be bought at the grocer's; but this is quite wrong. There is a little sugar in flour, and much more in pease, oatmeal, beets, honey, milk, and in most of the fruits.

You didn't think that we eat starch, did you? What is starch made from? From flour and potatoes. So, when we eat flour and potatoes, we eat the starch that is in them.

Common starch is useless as food, until it has been acted upon by certain fluids, called the digestive juices, and changed into sugar.

The spittle of the mouth thus acts upon starch,

A piece of bread, as you know, tastes sweeter after it has been in the mouth a minute or two.

Some people, especially children, do not like fat. as fatty meat and butter. Why do we need it? Because it is a heat-giving food. You know how brightly and quickly fatty things burn when set on fire. Well, they burn somewhat the same in the body, only much more slowly.

Shouldn't you think that people who live in cold countries would need a great deal of fatty food? Well, they do. The little Esquimau children will eat a tallow candle with as keen a relish as you would have for bananas or ice-cream.

Once upon a time some English sailors made a Christmas-tree for some Esquimau children, by tying together some walrus-bones, and hanging on them balls of whale-blubber instead of bon-bons. This was a rare treat for the boys and girls, who ate the balls of fat as eagerly as you would eat chocolate-creams.

LESSON XV.

THE SALTY FOODS.

WE have just read about certain foods which belong to animal and vegetable life. Besides these, we must eat certain things which never had any life. We cannot always see them or taste them in our food, but we need them just the same. You may call them the salty foods.

We could not get along at all without common salt. We read of men who have risked their lives to get even a taste of it. Many years ago wicked kings used to torture their prisoners by feeding them on bread alone, and that made without salt.

The lower animals like it too. You have seen farmers put salt in the pasture for the cows and sheep to eat. Wild animals will travel miles across the plains to reach the salt-licks.

How much salt do you suppose we have in our body? Almost half a pound, but we are all the time losing it. We find salt in the sweat, and we

know that tears are salty. You must not think that you do not eat any salt, because you do not eat it by itself. Many of the foods we eat have just a little of it.

Besides common salt, we need other kinds of salt to help purify the blood. These we get from vegetables. Growing children also need other salts to make their bones harder and stronger. This is one reason why children should eat plenty of bread and milk.

Would you believe that you need any iron in your food? Well, you do. Iron helps make good blood for you, and of a bright red color. Doctors, as you know, often give iron as a medicine to feeble people to make them stronger.

LESSON XVI.

THE WATER WE DRINK.

YOU will be surprised to learn that our bodies are largely made up of water. How much do you weigh? Suppose it is seventy-five pounds. Well, nearly sixty of these pounds are water. Some wise man has found out that if we could have all the fluid dried out of our bodies, the solid part would be only about as large as a hen's egg.

We are all the time getting rid of water through the skin, the lungs, and the kidneys. The sweat is oozing through the skin all the time, and we breathe out watery vapor from the lungs. When you are older you will read from some larger book about the work of the kidneys.

How shall we make up this loss? Why, we must take in water every day, both as food and as drink. Besides what we drink, there is a great deal of water in many things we eat, as fish, potatoes, lean meat, apples, and all the fruits. Water alone

will keep us alive for a time, if nothing else can be had.

A few years ago, a man succeeded in living forty days without taking any other food or drink than water. Think of the poor miner who lived twenty-three days in a coal-mine without swallowing any thing but water sucked through a straw.

Writing Lesson.

How necessary it is to have the water we drink pure and wholesome! Many dreadful sicknesses are caused by bad water. Sometimes a whole village of people has been poisoned by drinking water into which some drain has leaked, or into which some poisonous matter has filtered through the soil. People are now more careful about the water they drink than they used to be.

LESSON XVIII.

UNWHOLESOME DRINKS.

SHOULD you not think people would be satisfied with pure cold water to drink? Are they not? Not at all. More than this, is it not strange that people should want drinks which are certain to do them a great deal of harm?

Unwholesome drink can do us even more harm than unwholesome food. Too much or too little food, or food of the wrong kind, may make people peevish and cross; but strong drink makes them ill, ugly, and wicked.

The greater part of almost every drink is water; but, in various ways, other things are mixed with it to give it a pleasant taste. Such drinks have always been commonly used by all kinds of people. Of course, some drinks are far more hurtful than others.

Thus, in hot weather, many people drink soda-

water, lemonade, and other similar beverages which do not specially injure the health.

How about tea and coffee? Many people drink

Health Hints for the Blackboard.

them, as you know. But they do little or nothing to nourish the body, and so we cannot call them real foods.

Remember this, that tea and coffee are stimulating

drinks, just as pepper-sauce and pickles are stimulating foods. All such foods and drinks do much harm and very little good.

Most people cannot drink tea or coffee without being the worse for it. They cause headache, dizziness, a bad state of the bowels, and a too rapid beating of the heart.

Are tea and coffee good for children? Not in the least. Pure water and good milk are all they really need.

How often do we see people, over-heated and over-tired, drink glass after glass of ice-water! It is a foolish habit, and often leading to serious results. Sooner or later, ice-water weakens the strongest stomach. It quenches thirst only for a moment. If you must drink it, sip a little very slowly.

As you already know, the most unwholesome drinks of all are alcoholic liquors. In other lessons you will read more about the harm they do to the body. No person with a grain of sense will ever use them for a drink.

LESSON XVIII.

TOBACCO, AND THE HARM IT DOES.

WOULD you believe that thousands of people smoke and chew any thing which they know to be a poison? And yet they do. Do they know that it is hurtful? Some do; but tobacco has the power of making those who use it like it so well that it is almost impossible to leave it off.

You have no need to be told what it is so many people smoke and chew. Wherever you go, you are almost sure to smell the odor of tobacco.

Why is tobacco a poison? Because it has in it "nicotine," one of the most deadly poisons known. A single drop of it has killed a full-grown cat in one minute. A tea made of tobacco, and put on the skin, has caused death in three hours. Soldiers have been known to shirk military duty by making themselves sick with a leaf of tobacco, put under the arm or over the stomach.

You must know, then, that it must be hurtful

to the health to smoke or chew tobacco. What harm does tobacco do? Sooner or later, it makes the heart beat faster, brings on certain kinds of ill digestion, and irritates the throat and lungs.

Its effect upon the nerves and the brain is plainly evident. The poison of the tobacco deadens their delicate tissues. The old tobacco-user is cross, peevish, and liable to fits of anger.

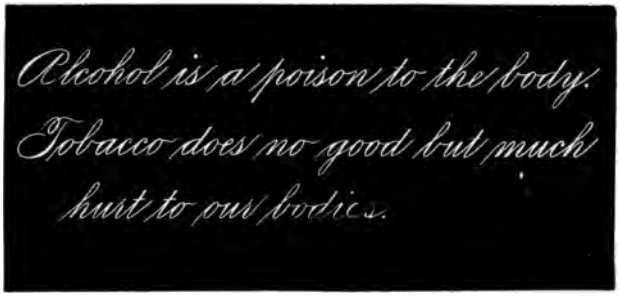
Tobacco has an injurious effect upon young people: it stunts the growth of the body, and weakens the mind. We sometimes laugh at the pitiable sight of a boy made sick by his first smoke. But there is nothing to laugh at. It is really the effect of a poison upon the delicate brain and nerves.

Even after young people get used to tobacco, they suffer from ill digestion, headache, loss of appetite, and a trembling of the muscles.

Let me tell you the whole story in a few words: No boy should ever use tobacco, if he wishes to keep well, and is anxious to succeed in life. The habit is costly, filthy, and hurtful to health.

Do you wish to keep your mind active and alive to all that is good and useful? Do you wish to

have clear ideas of things? and a vigorous will-power? Certainly. Well, then, let tobacco in every form severely alone. It will dull your wits, impair your power to think, and weaken your memory.



Blackboard Work.

God has given us good health as a precious gift. We cannot be too grateful for it. How weak and foolish it is to be chained to any filthy habit like that of smoking and chewing tobacco, which impairs so great a blessing!

LESSON XIX.

A FEW WORDS ABOUT CIGARETTES.

LET me tell you a few things about cigarettes, and the harm they do to young people.

The trade in cigarettes has grown to an enormous extent in late years. They are made and sold by millions. Thousands of boys are using the vile weed in the form of cigarettes at this very moment. All that money can do is done to entice young folks to smoke them. Advertising plans, which appeal to that which is bad in us, help increase this wicked trade.

Of what are cigarettes made? Let me tell you. The worst kind of tobacco is used, and this is mixed with poisonous drugs like opium, arsenic, and saltpetre. The intent is to give some bulk and flavor to the cheap and filthy stuff used in the first place.

Even the paper used in the wrappers is steeped with deadly drugs. Do you wonder that many of the States have passed laws against selling cigarettes *to boys?*

You will not be surprised now to learn that the smoking of cigarettes works a great deal of harm to the health of young people. It makes sad work with many of the most important parts of the body. The smoke irritates the lining of the throat and lungs, and causes a sore throat and a hacking cough. It weakens the stomach so that the food is not properly digested, and in time dyspepsia results.

Did you ever have your heart go pit-a-pat or beat very fast when you were startled? This is called palpitation. Well, cigarette smoke often makes the heart beat like this, because the busy little engine is weakened by the poison.

There are other ills which cigarette-smokers suffer from, such as loss of appetite, irritable temper, headache, dizziness, and general weakness.

In short, it would take all of this book to tell you the whole story of the evil that comes to those who use cigarettes. We hear a great deal about the deadly poison of sewer-gas, but a boy had better learn his lesson in geography over a man-trap than get into the habit of smoking cigarettes.

OUTLINE FOR REVIEW.

WHAT WE EAT AND DRINK.

1. *Our bodies compared to a steam-engine.*
2. *What we eat and drink.*
3. *Describe the flesh-making foods.*
4. *The heat-giving foods: what they are, and why we eat them.*
5. *Why we eat the salty foods.*
6. *Water, and why we need it.*
7. *Some unwholesome drinks: tea, coffee, and ice-water.*
8. *Tobacco, and its bad effect upon the health.*
9. *Cigarettes, and the harm they do.*

TEST QUESTIONS FOR REVIEW.

1. How would you compare the body to a steam-engine?
2. Why do we need to eat food?
3. What is meant by the flesh-making foods?
4. Give some familiar examples.
5. Tell something about the sugars and starches.
6. Why do we need fatty foods?
7. What is the value of the salty foods?
8. Of what is the body largely made up?
9. Why do we need water as a food?
10. What is the effect of using bad water?
11. What will you say about the use of tea and coffee?
12. Describe the hurtful effects of alcoholic liquor.
13. Show how tobacco acts like a poison.
14. What harm does tobacco do?
15. Describe its harmful effects upon young people,
16. Of what are cigarettes made?
17. How do they injure the health?

LESSON XX.

HOW WE DIGEST OUR FOOD.

CAN any thing be more wonderful than that meat and potatoes and bread and water, and other things that have no life in themselves, should, when once taken into the body, change into living bone, living flesh, and living skin? Indeed it is something wonderful. You may well imagine that the food must be changed a great deal before it can become a part of the blood.

How does the food get into the blood at all? How is it ever made fit to mix with the blood? Let me tell you a few of the simplest things about it.

In the first place, the food is cut into little pieces by the teeth, — useful little jewels, of which the jaws are the jewel-cases. Then it is rolled around by the tongue, pressed against the roof of the mouth, and wet with its juice, which makes it easier to swallow.

When we swallow food, it passes down the food-pipe, into the stomach. This is a pear-shaped bag, capable of holding about two quarts. Soon as the food reaches the stomach, it begins to move, with a waving motion, that carries the food round and round, as if it were being churned.

The walls of the stomach are full of blood-vessels; and after a time some of the food makes its way through the thin lining of the walls, and thus gets into the blood itself.

The rest of the food passes out into the bowels. This is a tube about thirty feet long, but so rolled up and folded away, that it takes up but little room. Now, the food, mixed with other curious juices, is pushed slowly onward through this long tube. The nutritious part, little by little, soaks through the very thin walls of the blood-vessels, and mixes with the blood.

Then the blood carries it everywhere. Each part of the body — the bones, muscles, skin, hair, and so on — takes out what it wants.

LESSON XXI.

WHY WE SHOULD EAT WHOLESOME FOOD.

WHAT kind of food should we eat? What sort will do us most good? Why, that which is most easily changed by the digestive juices, into those things fit to mix with the blood. If we were to fill our stomach with gravel or sawdust, it would not thus be acted upon, and could not, therefore, feed us.

Suppose you should try to make your horse or cow live on meat. It would not keep either of them alive, any more than grass or oats would feed us. It is not what we eat, but what we digest, that really keeps us well and strong.

We can tell pretty well what agrees with the stomach. If we feel uncomfortable after a meal, instead of comfortable, it is most likely we have eaten something wrong, or eaten too fast, or too much. If it takes you a long time to get asleep, if you have bad dreams, or wake in the morning

with a headache, and have no appetite for breakfast, it is often because you ate an unwholesome supper the night before.

Health Hints for the Blackboard.

Children will often be fretful and cross, because their food does not digest well. If you wish to feel well and hearty, do not eat any thing but wholesome food. Some people seem to think

that even if they tease their stomach, and get it out of order, they can make it well again by taking medicine. So they keep on eating things that hurt them, and then take medicine to mend the mischief.

It is better not to have to take medicine at all; but to try in other ways, such as careful eating, good food, and proper exercise, to have the stomach and bowels do their duty well and easily.

LESSON XXII.

SOME OF THE PROPER THINGS TO EAT.

WHAT are some of the most wholesome things to eat? Let me tell you of a few. Of course, every one eats bread, without which we should be poorly off.

There is no single food in the world which meets so many of the real needs of the body. Wheat-flour has every thing to support life, except fat. When you eat bread and butter, you are eating nearly a perfect food.

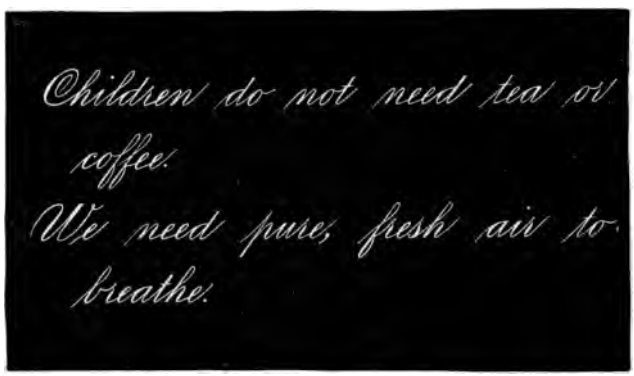
There is one thing which we can live on for a long time, without wanting any thing else to eat or drink. It will not only keep us from wasting away, but we shall grow larger and fatter on it. What is it? Milk.

You know a baby can live on milk for months, and is all the better if it gets nothing else. Well, if you come to think of it, milk is in itself several kinds of food. It has something like lean meat

in it, and also fat and some salt. How sweet milk is! because it has in it a great deal of sugar. It is indeed a model food.

What a wonderful thing is an egg! It has a great lot of food packed away in the smallest space, and is easily digested.

Almost every boy and girl likes meat. It is simply the muscles of different animals. We call



Blackboard Work.

it by various names, as beef, mutton, lamb, veal, and pork. It is all wholesome and easily digested, except, perhaps, veal and pork.

Fish and poultry are goodly articles of food,

and are readily digested. Sugar is wholesome, and we need it. Children will often eat too much sugar, just as they will eat too little fat.

There is plenty of sugar in ripe fruit, such as apples, peaches, pears, melons, grapes, and oranges. No wonder everybody likes fruit: it is sweet, and has an agreeable flavor.

LESSON XXIII.

SOME HINTS ABOUT EATING.

TO keep well, we should have an appetite for wholesome food. The plainest and simplest food is the best. Those children who are all the time eating rich cake and pies do not care for plain food. When you are hungry, you are glad to get simple food. When you leave off being hungry and enjoying your food, it is a sign you have had enough. After that, if you go on eating, it does you harm instead of good.

Dainties will only coax you to eat more than you really need. You should eat very sparingly of rich pastry, and avoid hot bread, pork, and other unwholesome food, so hurtful to all, but especially to young and growing children. How much better it would be for you to make a meal of oatmeal and milk, baked apples, a soft-boiled egg, and stale bread!

After you have worked hard, or played some

lively game, you like to rest, don't you? Certainly. Now, your stomach, after it has worked hard to digest food, should also have a rest: so don't rob it of its needed rest by eating between meals.

You should eat your meals about as regular as the clock. Never skip a meal if you can help it. What a foolish habit it is of going to school or

Writing Lesson.

to work in the morning without eating any breakfast! It is sure to end in ill digestion. Never eat just before going to bed: it will save you from uneasy sleep, bad dreams, and a fit of ill digestion.

We should not eat when we are very tired. Rest, if only for ten minutes, before eating a full meal. Sit down quietly, or read a few moments,

before you eat your dinner. After a hearty meal, rest a little while before you play hard or study your lessons.

People who eat very fast, and swallow their food nearly whole, get very little good from it. Of course, it does not digest properly. Remember, then, to eat slowly, and chew your food well, so that the juices of the mouth and stomach can do their part in helping along digestion.

Is it a good plan to drink much while eating? Certainly not. A drink of ice-water or of cold well-water chills the stomach, and digestion is stopped for the time. Do not take food or drink too hot or too cold; it is apt to stop digestion. You should not drink freely of very cold water, when the body is heated. Sit down and cool off for a few minutes, and even then drink sparingly.

If you wish to digest your food well, you must not fuss or worry while eating. You know, they say that hunger is a good sauce: so also are a jolly laugh and a merry joke.

LESSON XXIV.

HOW ALCOHOLIC DRINKS INJURE DIGESTIO

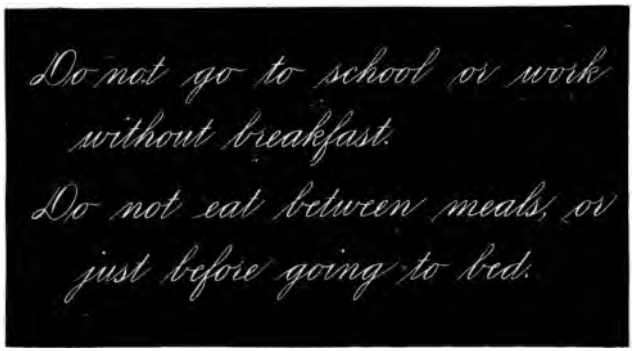
THE stomach is very quick to make know likes and dislikes. You know well en what happens when you have eaten unripe or perhaps swallowed your dinner in a hurry. You suffer pain in your stomach for carelessness.

Now, this same busy stomach has no likin the alcohol which is in all kinds of strong d A drop of brandy put into the eye will ma smart and look red: so alcoholic liquors the inside of the stomach red and inflamed.

Besides, strong drink takes away some from the power of the juice of the stomac digest food. So you see alcohol must hinde real work of the stomach, which is, of cours help digest food. In brief, beer, wine, cider, other alcoholic drinks cause indigestion.

In the morning the dram-drinker has little a

tite. He must have a drink of liquor before he feels right. After bracing up his stomach, as he calls it, he feels more like eating. If he does eat, there is a dull, heavy feeling of discomfort. No wonder the hard drinker so often suffers from the most distressing forms of indigestion.



Blackboard Work.

Now, all parts of the body work together for the good of each other. So we must not forget, that, when the stomach is unable to digest food properly, many other parts of the body suffer as a result.

OUTLINE FOR REVIEW.

HOW DIGESTION GOES ON.

1. *How food is digested.*
2. *The kind of food to eat.*
3. *How unwholesome food may hurt us.*
4. *Some of the wholesome things to eat.*
5. *Why plain and simple food is the best.*
6. *The best time to eat.*
7. *How we should eat.*
8. *How alcohol causes ill digestion.*

TEST QUESTIONS FOR REVIEW.

1. What do you mean by the digestion of food?
2. What takes place in the mouth during digestion?
3. Tell what you can about the stomach.
4. What kind of food will do us most good?
5. What is the effect of eating unwholesome food?
6. What will you say of bread? of milk?
7. Mention some other wholesome things to eat.
8. Show how the plainest and simplest food is the best.
9. Why should we eat our meals regularly?
10. Why should we rest both before and after eating a full meal?
11. Why is it unhealthy to drink very cold water while eating?
12. Give some other hints about eating.
13. Describe the effect of alcohol on the stomach.

LESSON XXV.

THE BLOOD,—THE RIVER OF LIFE.

WHEN you prick your finger with a needle, and the blood runs out, it looks like a red fluid, doesn't it? Certainly. And yet the blood is really not red. Then, why does it look red? Let me explain.

The blood is a fluid very much like water, with little red bodies whisking round in it, like tiny red fishes in the rapids of a river. There are so many of them, that they make the blood look red.

The shape of these little bodies is like a cent; and they are so tiny, that, if you had fingers small enough, you could put about fifty thousand of them on the head of a pin.

You may think of them as the tiniest of tiny boats, which busy themselves every moment of our lives in carrying precious cargoes to every part of our body.

To circulate means to go round; and the circu-

lation is so called because the blood goes round and round in our bodies. It never rests for a single moment.

Put your fingers on the thumb side of your wrist, and you will soon feel a gentle throbbing. Did you feel it? This is made by the blood flowing through its little tube. Did you ever notice the rubber pipe of a garden-hose move on the grass at each stroke of the pump-handle? This is exactly the way the blood is pumped through its tubes.

The smallest of these pipes are so close together, and there are so many of them, that there is not a spot on us as large as a needle's point that has not its own little tubes filled with blood.

These tubes, or blood-vessels as you may call them, are of three kinds. Those which carry the blood *from* the heart are called arteries. Those which bring the impure blood *to* the heart are called veins. Another set of little tubes makes a network, which serves as a passage-way between the arteries and veins. These very small pipes are known by a very long name, — the capillaries,

— which means they are like hairs. Really, the finest hair is like a huge cable, compared with these tiny blood-vessels.

They have such very thin walls, — much thinner than the thinnest tissue-paper, — that the blood can pass through them into the flesh or skin, or, in fact, into whatever part of the body lies next to them.

You may think of an artery and a vein as like two streets, and the capillaries like a number of little lanes, through which the blood finds its way from one of the streets to the other.

LESSON XXVI.

THE HEART,—THE BUSY LITTLE PUMP.

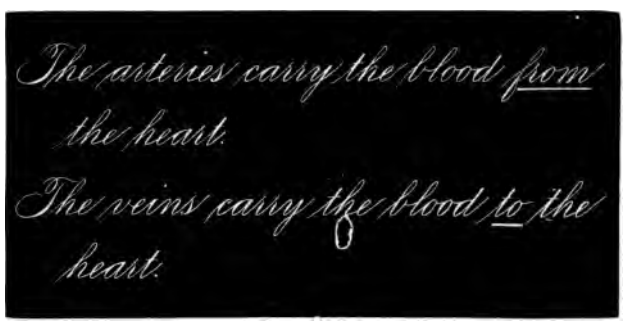
WHAT is it that forces the blood into every nook and corner of the body? Why, it is the most wonderful little pump you ever heard of. There is no steam-engine half so clever. What is it? you ask. Well, it is your own heart. You can easily feel it beating in the middle of your chest, a little toward the left side. Here it is, ticking like a watch, all day and all night, year after year, and never needing to be wound up.

What is the shape of the heart? Somewhat like a strawberry, and about the size of your closed fist. If you could look into your heart, you would find it hollow, and divided into four rooms.

In each room a blood-vessel either enters or starts off, through which blood runs into or out of the heart. In a picture of the heart, you will see some pipes coming out of it. These are the

largest blood-vessels, which, dividing into smaller ones, carry blood all over the body, just as water-pipes carry water all over a town.

The blood carries certain portions of the food, made ready by digestion and by the fresh air we breathe, to every part of the body. It gathers up as it goes the impurities and waste matters, and



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brings them back to the heart, from which the blood goes to the lungs to be purified.

The heart that does all this pumping is no larger than your own fist. What a wonderful busy machine it is! Just think of it, — beating away thousands of times every day, never stopping for a second, from birth till death!

LESSON XXVII.

HOW EXERCISE HELPS THE CIRCULATION OF BLOOD.

IF you could look inside of your bodies, and see all that is going on, you would hardly guess that moving about would do us any good. When you saw the heart pumping away, and the blood rushing along, you would most likely feel half-frightened, and think to yourself, "I must not move: I must keep quite still, or I shall break something, or stop something."

You wouldn't for one moment suppose it would do you good to run and jump about. You would as soon think it would do a watch good to roll it along the garden-walk. How miserable we should be if we had to sit or stand quite still in one place all our lives!

But we were not made for this. We were made to be active, and not to stand still. Hence the machinery of our bodies, which is a hundred times

finer and more delicate than that of any machine you ever heard of, is so suited to our wants that it is all the better for a good deal of exercise.

Look at boys playing at base-ball, or running races, or going head-over-heels! Look at girls with their swings or their skipping-ropes! We twist and tumble about our bodies in all sorts of ways; and yet all the time the little heart goes on with its regular *tap*, *tap*, *tap*, against the ribs, quite undisturbed by all the odd jumps and jolts. If it does go on a little faster for the exercise, it does it good, and not harm.

Exercise makes the blood flow faster; then the heart has to beat faster, and next the lungs have to breathe faster, so that the air may be there in time to meet the blood. The pure blood is sent round again into the arteries sooner; and it clears away faster the waste matter, and feeds every part quicker as it runs along. This quicker flow gives more life and vigor to every part of the body.

When we feel cold, a brisk walk or a lively game will "start the blood," and make us feel warmer. So you must be careful not to wear

your clothing tight enough to hinder the flow of blood.

Tight garters often cause cold feet and chilblains. Belts, straps, tight boots and shoes, can be worn

Blackboard Work.

tight enough to check the circulation of blood. Pure air, a wholesome diet, and a proper amount of rest and clothing, will do much to make the blood healthy, and to keep it so.

LESSON XXVIII.

EFFECT OF ALCOHOL UPON THE BLOOD-VESSELS AND THE HEART.

A GLASS of strong drink soon "goes to the head," as many people know, showing that its effects are rapidly felt in the brain.

Let me tell you how this happens. When such liquor is taken into the stomach, much of it soaks through the coats of the little blood-vessels in its lining, and is rapidly carried into the main blood stream.

When the poisonous liquor is once in the blood current, it is, of course, swept along into every little nook of the body. How rapidly all this is done, depends upon the kind of liquor and the state of the stomach.

Did you ever notice how red is the face of a person who drinks strong liquor? Now, the flow of blood in the tubes is regulated by the little telegraph-wires we call nerves.

The alcohol weakens these nerves so that they lose their grip on the blood-vessels, and more blood than usual flows through them. This shows through the skin, and so makes the drinker's face red and flushed.

You might well think that the heart has enough to do without being forced to work still harder; yet beer, wine, cider, and all alcoholic drinks give it more work to do. They cause it to beat faster for a time.

This means more work and less rest for this busy little force-pump. The result is just what you might expect: the heart gets tired of being whipped into doing extra work, and after a time is weary, and fails to do even its regular duty well.

OUTLINE FOR REVIEW.

THE BLOOD AND ITS CIRCULATION.

1. *The blood: what it is; how it looks.*
2. *The tubes that carry the blood.*
3. *The heart as a busy pump.*
4. *Why we need exercise.*
5. *How exercise affects the circulation of the blood.*
6. *Effect of alcohol upon the blood-vessels and the heart.*

TEST QUESTIONS FOR REVIEW.

1. How does blood look to the naked eye?

2. What makes the blood look red?

3. Illustrate by some familiar thing.

4. What is meant by the circulation of blood?

5. Describe the different kinds of blood-vessels.

6. Show how the heart acts like a busy little pump.

7. Tell what you can about the heart.

8. Why should we be surprised if we could look inside of our living bodies?

9. Show how our bodies were made to be active, and not to keep still.

10. Show how exercise makes the blood flow faster.

11. What is the effect of tight clothes on the circulation of the blood?

12. How does alcohol get into the blood?

13. What effect does alcohol have on the circulation of blood?

14. How does alcohol affect the heart?

LESSON XXIX.

HOW AND WHY WE BREATHE.

DO you know what air is? Can you see it? What is air made of? We shall read more of this presently. What is the use of air? Why, we breathe it to live. If there were no air in this room, we should soon die.

How does air keep us alive? Do we eat it? No: we can see the things we eat. Do we drink it? No: we can see the things we drink. And yet we really feed on it. What do you mean? you ask. Why, we feed on air every moment; that is, we breathe it.

Breathing is feeding on air. Cats and dogs breathe. We see their sides move in and out, the same as our own chests do. Haven't you ever watched the breath puffing out of a horse's nostrils after a brisk trot? On cold winter mornings we see our breath coming out of our mouths, like a cloud of steam.

Strike the upper part of your chest, just below the collar-bone, with the flat of your hand: now strike your knee in the same way. See what different sounds you get! How will you explain this? Why, your chest sounds hollow, — almost like a drum, — because your two lungs inside your chest are full of air.

When we breathe, the air goes down into our lungs, which are something like large sponges. These sponges are full of a great many little blood-tubes and a countless number of little air-bladders. There is only a very thin skin between them, so that the blood almost touches the air.

Through this little fine skin the blood gets rid of a part of the waste and useless things it has been collecting from all parts of the body, and takes in the fresh air which the body wants.

You may look upon the lungs, if you please, as a kind of market-place where two merchants, the blood and the air, meet to exchange their wares. About sixty barrels of air pass in and out of the lungs every day. You may indeed well call it a very busy market-place.

LESSON XXX.

HOW THE AIR IS CHANGED BY BREATHING.

WHEN we breathe we do not simply draw in air, and send it back again: we breathe *in* with the fresh air some very necessary things that our bodies must have; and we breathe *out* with the old air some things which the body has used, and needs to get rid of. We breathe out little bits of our own bodies just ready to decay. This gives the air the sickly smell which we so often notice in an over-crowded room.

If we breathe on a bright knife-blade or a looking-glass, you know it becomes dim and damp. What makes it? Why, the little drops of water that we breathe out. The air we breathe out is warmer than that which comes in. Any boy knows this, when he blows on his fingers on a cold day to keep them warm.

Again, we breathe out a kind of poisonous gas which we can no more see than we can the air

itself. If there is too much of it in the air we breathe over, it poisons us. We soon begin to breathe hard, grow pale and faint, and after a time would die.

Many miles away from your house, there is a cave in which this gas comes out of the ground. To show how poisonous it is, the people who live

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near sometimes put a dog into it for a few minutes.

When they take the poor animal out, he looks as if he were dead. If they should leave him there long, he would die; but they do not wish to kill him. They dash water over him, and let him again breathe the fresh air, and he is soon as well as ever.

But it is not right to keep on doing this. They must be cruel people who would thus treat a poor dog, or any living creature just to prove over and over after it is well known that the air in the cave was bad.

Perhaps you have read the story of the "Black Hole of Calcutta." Many years ago a cruel prince in the far-away land of India, having captured a hundred and forty-six Englishmen, crowded them, one hot night, into a little room where the only window did not let in enough fresh air for the prisoners to breathe.

They struggled and fought for air; but at last the deadly gas you have just read of began to poison them, and in the morning only twenty-three were alive.

LESSON XXXI.

HOW BAD AIR MAKES US ILL.

MANY other things besides the bits of waste matter from our breath may make the air unfit to breathe. Even pleasant odors, like roses and lilies, are unhealthful, if shut up in a room. Dirty walls, ceilings, and floors give the air a close, musty smell; so do dirty clothes, filthy sinks, and the contents of slop-pails.

Some of these things ought not to be in the house at all; others remind us to open the windows wide, and let in pure air.

Did you ever notice, when the bright sunlight streams into a room where people are at work, how thick the air is with bits of dust? Now, some kinds of dust are very hurtful to breathe into the delicate air-cells of the lungs.

Men who work in mines have to breathe in much dust, which irritates the lungs, and often causes "miner's consumption." The dust which

floats in the air in match-factories, white-lead works, and other work-shops, is very unwholesome to breathe.

A poison called arsenic is sometimes used in wall-paper. If we should sleep in a room with this kind of paper on the walls, we might breathe in enough of the dust from the arsenic in the air to injure our health.

While all we have told you about pure air applies to people in health, it is still more important to sick people; they need good air as much as they do good food. Every thing that comes from a sick person's body is still more unwholesome than that from a healthy person, and may be a downright poison.

Many learned men now believe that often diseases are really sown in our bodies by a kind of very small seeds, much as you would sow flower-seeds in the ground. Some of these tiny bits of disease, they tell us, float in the air. If we breathe them in, they are quite likely to give us some "catching" disease, like scarlet-fever or measles.

LESSON XXXII.

PURE AIR, AND HOW TO BREATHE IT.

WE need pure, fresh air to breathe as much as we do clean food to eat, or pure water to drink. Now, if a room is crowded full of people, they soon use up all the good air; and, unless fresh air comes in through the windows or doors, they soon begin to breathe the bad air over and over again.

This it is that makes us feel so tired and dull after sitting for a long time in a crowded room. The air is loaded with that deadly gas you just read of, and it acts like a slow poison. In brief, there is not enough good air to purify the blood in the lungs.

You must remember that we need pure air just as much by night as by day. Of course, we go on breathing all night. If you are so unwise as to shut in the bad air, and to keep out the pure air all night long, you must not expect to wake

up feeling well. It is very unpleasant to go into the bedrooms of people who do not air their rooms before they leave them in the morning.

Those who have tried it know very well that they sleep better and wake fresher, if they keep the air of their bedrooms sweet and clean all night. There is hardly a night in the whole year when it is not safe to keep a window open an inch or two at the top. We must have, however, clothes enough on our beds to keep us warm.

How about the air of school-rooms crowded full of children? Some of them are not so tidy and neat as they might be. The air soon becomes bad, and the pupils uneasy, dull, and sleepy. What shall we do? Why, let out the bad air, and let in the pure air. How? Open the doors and windows before and after each session, at recess, and during any gymnastic exercises.

Windows may be lowered a few inches at the top. Draughts of cold air should never be allowed to fall directly on the heads of children.

There is nothing better than pure, fresh air, to make pupils like to study.

LESSON XXXIII.

HOW ALCOHOL AND TOBACCO ARE HURTFUL TO THE AIR-PASSAGES.

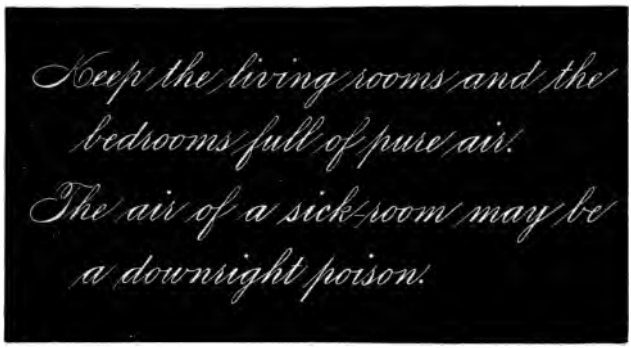
DID you ever hear the wheezy, broken talk of a person who had long been used to drinking alcoholic liquors? What makes it? Why, the alcohol has irritated the lining of the air-passages.

Don't you remember, when you have breathed the fumes of a burning match, how it has irritated your throat, and made you wheezy and hoarse for a few minutes? Now, this is the way that strong drink acts to make the voice rough and broken.

This isn't all. This irritation goes down into the delicate lining of the lungs themselves, and after a time makes it thicker. This makes the breathing-space less.

You will remember that you were told in Lesson XXV., that alcoholic drink lessened the control of the nerves over the blood-vessels, and caused too much blood to flow through them.

Now, this repeated stretching of the tender little blood-tubes of the lungs makes the dram-drinker more liable to attacks of severe cold, lung-fever, and other diseases of the air-passages.



Blackboard Work.

How is it about tobacco? Why is it hurtful? Let me tell you. Breathing air full of tobacco-smoke is apt to cause irritation in the air-passages. Breathing tobacco-smoke through the nose is hurtful to the throat and lungs. Cigarette-smoking also is especially irritating to the air-passages.

OUTLINE FOR REVIEW.

BREATHING, AND WHAT COMES OF IT.

1. *What it is to breathe*
2. *How we breathe.*
3. *Changes in the air from breathing.*
4. *How bad air may make us ill.*
5. *Why pure air is important to sick people.*
6. *How to breathe pure air.*
7. *Effect of alcohol upon the air-passages.*
8. *Effect of tobacco upon the throat and lungs.*

TEST QUESTIONS FOR REVIEW.

1. Of what use is the air?

2. What is meant by breathing?

3. Describe the lungs.

4. What takes place in the lungs?

5. How is the air changed by breathing?

6. What poisonous gas is found in the air we breathe out, also in nature?

7. Describe some other things which may make the air unwholesome to breathe.

8. Show how pure air is necessary to sick people.

9. What are the effects of breathing the air over and over again?

10. Show why we need pure, fresh air as much by night as by day.

11. What effect does alcohol have upon the air-passages?

12. How does tobacco affect the air-passages?

LESSON XXXIV.

THE SKIN, AND HOW IT LOOKS.

OUR body is covered with a soft, tight-fitting garment; it is easily kept clean, and never wears out. What is this dress-suit that kind Nature gives us? Why, we call it the skin.

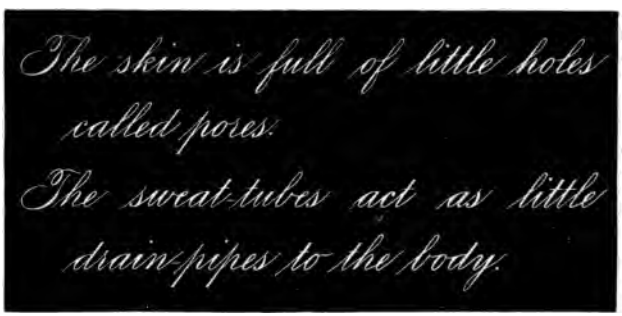
We might almost say we have two skins. The outer or scarf skin has no blood-vessels or nerves in it. You know we can give ourselves a little scratch without making the blood run, or feeling any pain from it. It is this outer skin that is raised into a blister when we burn our fingers.

If you have ever torn off a blister, you know how very tender and painful is the pink skin underneath. This is the real skin. When this is hurt, it makes a scar. Look and see if you can find somewhere on your hand a white scar, made by a deep cut.

The scarf-skin really consists of a countless number of little horny scales, laid one above another,

as you might imagine the roof of a house would look with a dozen or more layers of shingles. The outer scales are all the time wearing out and rubbing off, and new ones are always forming underneath.

A snake, as you may know, sheds its whole skin at once, — as if a boy should crawl out of his



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clothes; and sometimes you may find in the fields its cast-off skin, turned inside out, just as the snake squirmed out of it, and crawled off with a soft new dress on.

Now, we shed our skin, a little at a time, and in such powdery scales that we cannot usually see them; but if we take any garment that has been

worn next the skin, and shake it in the sunlight, we see how much dust there is inside of it.

This dust is really little bits of the scarf-skin which have dropped off or worn away. Where the skin is pretty thick, as on the palms of the hands or the soles of the feet, we can, when we wash ourselves, see dead skin peeling off in little scales.

LESSON XXXV.

WHY WE NEED TO WASH OURSELVES.

DID you ever look at your skin through a magnifying-glass? If you ever did, you would find that it is full of little holes, or pores as they are called.

Just think how very small these pores are: five thousand of them have been counted on the tip of one finger. Each pore is the opening of a tiny pipe just under the outer skin, rolled round and round like a ball of the finest silk.

If you could unroll all these little tubes, and put them end to end like a gas-pipe, they would reach nearly four miles. Do these little pipes have to work hard? Indeed they do. Through them a kind of water oozes out. You know we call it sweat.

You must know that the sweat is not clean, pure water; but has in it, besides water, waste matter which would make us ill if we did not get rid of it.

Thus you see that the sweat-tubes act as little

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You must know that the sweat is not clean, pure water; but has in it, besides water, waste matter which would make us ill if we did not get rid of it.

Thus you see that the sweat-tubes act as little

drain-pipes to rid our bodies of waste matter. Suppose the drain-pipes that lead from your house should get clogged: you can guess what an unhealthy state the house would soon be in. Just so it is with our bodies if the sweat-tubes get clogged.

If a person had his skin varnished all over, so as to stop up all the pores, he would die within a few hours. Many years ago a little boy was completely covered with gold-leaf in order that he might play the part of an angel in a show. He was afterwards put to bed without the gold having been washed off; and when his parents tried to rouse him the next morning, he was dead.

How necessary, then, it is to have a clean skin, and to wear clean clothes! Many people think they have done quite enough if they wash every day their hands and faces and the parts that are seen. But it is even more necessary to wash the parts of the body that are not seen, and are covered with our clothes; because all the dirt which comes from inside the body stays on the surface, and is not rubbed off, as it might be on our hands and faces.

LESSON XXXVI.

HINTS ABOUT TAKING A BATH.

YOU know how fond birds are of taking a bath. It is very amusing to watch them, they do enjoy a bath so much. They do not shiver at the touch of cold water, as some children do. They take great pains, as you know, to throw it over their back and heads, and to get washed all over.

Now, a cool bath in the morning, when we get out of bed quite rested, will make us feel better every way. It may make us feel a little chilly at first; but the blood will soon run the faster for it, and a pleasant glow will be felt all over the body.

A bath at bedtime is refreshing, and will make us sleep better. There is little risk of taking cold if we go to bed at once.

It takes very little time or expense to take a daily bath of some sort. A hand-basin, a sponge, a piece of castile-soap, a gallon of water, and a towel are all that is required. Even rubbing the

body every day, first with a damp towel and afterwards very briskly with a dry one, will keep the skin clean enough during the week, provided a bath with soap and warm water is taken once a week.

Blackboard Work.

Most persons, especially the young and vigorous, soon get used to cool, and even cold, water baths. The good effect of a bath is proved by the warm

glow which follows the rubbing with a towel after bathing.

Swimming in fresh water or in the salt water has a wholesome effect on the skin, and is one of the best of exercises. Young people should be taught to practise it whenever it is convenient.

You should never go in swimming when you are over-heated or very tired. Many are drowned every year from ignorance or carelessness in this matter alone. The risk is from sudden cramps, which cause even a strong swimmer to sink like a lump of lead. For the same reason, it is not safe to take a swim just after a full meal.

LESSON XXXVII.

CLOTHING, AND HOW TO WEAR IT.

A THIN and delicate skin is our only natural covering. Why do we need any other? Why do we need clothing? Let me tell you. Our bodies are, as you know, much warmer than the air out of doors, so they are always giving out their heat to the air.

When our bare skin is exposed, we lose heat rapidly, and feel chilly and cold: hence we wear clothes to keep the heat of our bodies from escaping too rapidly into the air.

Is there another reason? Yes. In summer weather, especially in hot countries, the direct rays of the sun would scorch our skin.

Again, clothes save the skin from being torn or hurt by accident; they also keep out the wet, so that we can better bear exposure to rain or snow.

Clean clothes are very pleasant, and help make us feel comfortable. This is true not only of

garments used for day wear, but of bed-clothes and night-clothes. No one should sleep in the clothes he wears during the day. Undergarments should be frequently and regularly changed. Bed-

Health Hints for the Blackboard.

clothes should be exposed freely to the light and air.

Many a sick person could tell you that a clean night-dress and clean sheets and pillow-case do

LESSON XXXVII.

CLOTHING, AND HOW TO WEAR IT.

A THIN and delicate skin is our only natural covering. Why do we need any other? Why do we need clothing? Let me tell you. Our bodies are, as you know, much warmer than the air out of doors, so they are always giving out their heat to the air.

When our bare skin is exposed, we lose heat rapidly, and feel chilly and cold: hence we wear clothes to keep the heat of our bodies from escaping too rapidly into the air.

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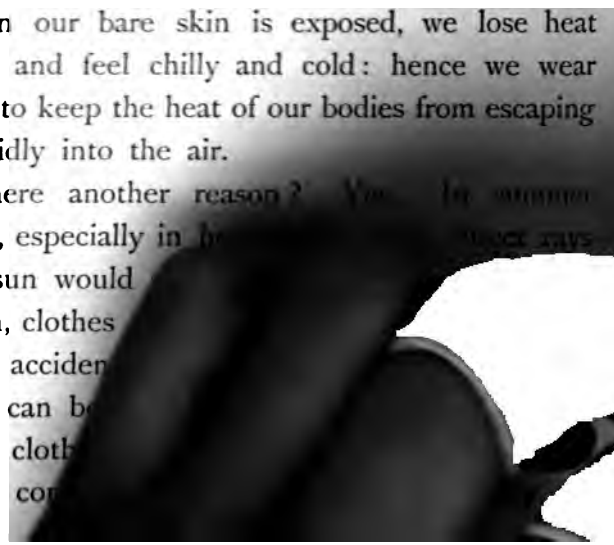


garments used for day wear, but of bed-clothes and night-clothes. No one should sleep in the clothes he wears during the day. Undergarments should be frequently and regularly changed. Bed-

him more good than his medicine. And you can see why: because the dirty linen is loaded with the waste and impurities the body is trying to get rid of.

Clothes should be changed according to the climate or season of the year. It is not prudent to leave off winter clothing too early in the spring. Never wear wet or damp clothes one moment longer than possible. If you get wet, take the shortest way home, rub down thoroughly, and put on at once dry, warm clothes. Do not let your damp skirts, wet stockings or shoes, dry on you; but always change them at once.

You must see to it that you wear proper outside garments on going out, and that they are taken off on coming in doors. Pupils should not sit in the schoolroom with outside garments on, such as waterproofs, gossamers, cloaks, rubbers, rubber boots, and leggings.

LESSON XXXVIII.

EFFECT OF ALCOHOL ON THE SKIN.

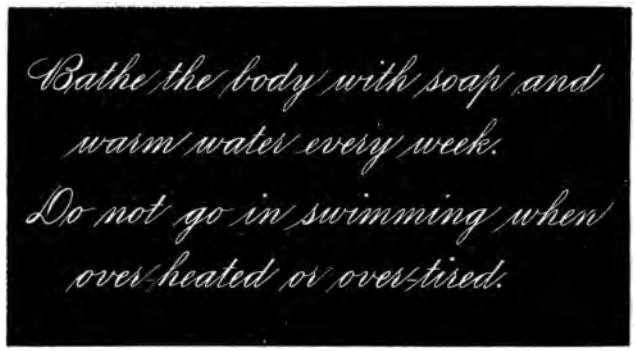
HOW often do we hear people excuse themselves for using strong drink in cold weather, by saying that it makes them warmer! Are they really warmer? No, indeed. "Yes," they say, "but isn't there a feeling of warmth over the body after a drink of liquor?" To be sure there is. How does this happen? Let me tell you.

You remember that alcohol has the power to make the nerves lose their grip on the little blood-vessels, especially those near the surface of the body. It is the same as if the garden-hose should be suddenly stretched to twice its size when water was being pumped through it. Of course more water would be forced through.

Now you will see how more blood is driven to the surface of the body from the inside. This outside heat is rapidly cooled off by the air. Thus you see that the surface is warmed for the time,

at the expense of the deeper parts. There is no real increase of heat, but there is actually less heat in the body, after taking strong drink.

People who live in cold countries know all this by experience. Do you suppose the Arctic explorers let their men drink all the strong liquor



Blackboard Work.

they please? No, indeed: they are not allowed to touch it. If they did, they could not endure the fearful cold and exposure of those icy regions.

It is the same in hot countries. Army officers, employed in the hottest parts of the world, have found that alcohol was a real injury to the soldiers.

OUTLINE FOR REVIEW.

HOW OUR BODY IS COVERED.

1. *How the skin looks.*
2. *The sweat-tubes, — the drain-pipes of the body.*
3. *Why we need to take baths.*
4. *Baths: how and when to take them.*
5. *Why we need to wear clothing.*
6. *Some hints about wearing clothing.*
7. *Effect of alcohol and tobacco upon the skin.*

TEST QUESTIONS FOR REVIEW.

1. How is the body covered?
2. Describe the scarf-skin.
3. Tell what you can about the true skin.
4. What is the sweat? and where does it come from?
5. To what may we compare the sweat-tubes?
6. Why do we need to wash ourselves?
7. Give some hints about taking a bath.
8. What are some of the dangers of swimming?
9. Why do we need clothing?
10. Give some hints about the use of clothing.
11. What is the effect of alcoholic liquor upon the heat of the body?
12. What effect does alcohol have upon the power of the body to endure heat or cold?

LESSON XXXIX.

THE CARE OF THE TEETH.

IF you had a beautiful knife given to you, you surely would not put it away without cleaning or wiping it. You would do all you could to keep it bright and well polished, wouldn't you? Certainly. We should think ourselves very foolish if we let it get rusty for want of wiping it clean.

We should be much more foolish if we neglected to keep our teeth — a very nice case of instruments given to us for our use, health, and comfort — quite clean.

The teeth should be well cleaned with a tooth-brush and water every morning and night. All our teeth are covered with a bright, shining kind of polish, which is somewhat like the shining outside of china-ware. It is very hard, and serves to protect the teeth from decay.

When this polish is cracked or broken by biting any hard thing, such as cracking nuts, crushing

hard candy, or biting off stout thread, then the piece of tooth, which is softer inside, begins to decay, and pain is soon felt. Most of you know what it is to suffer from toothache.

Writing Lesson.

Picking the teeth with a pin or needle is hurtful. Dirty and decayed teeth are often the cause of a bad breath and a foul stomach. As you grow older, you must use the greatest care to save your teeth. If an ounce of prevention is worth a pound of cure, surely it is in keeping the teeth in good order.

LESSON XL.

GOOD EYESIGHT, AND HOW TO KEEP IT.

THE eye is very delicate and sensitive. You know how it hurts to get even a small cinder in it. It is very easy to get the eye out of order, and a very slow matter to make it well again.

Did you ever have the measles or scarlet-fever? If so, you know how weak were your eyes for a long time afterwards.

You must not get into the habit of reading in bed at night, or while lying down in a darkened room. After you have used the eyes for some time, as in reading, you should rest them, even only for a minute, by looking at something far away.

After you have read or sewed for a long time, you know the eyes are apt to smart, or the sight is dim or blurred. This is a hint for you to stop and rest them. You must never try to read at dusk, especially if the print is poor.

How often we get things into the eyes! You will be sure to feel like rubbing them. It is the worst thing you can do. The sooner the thing is got out of the eye, the better. Rubbing the eye, or pulling the eyelids, only makes a bad matter worse.

Sometimes your slate is greasy, or the print of some school-book, especially that of maps, is fine or blurred. You must be careful, or else your eyes will suffer from the strain.

Tobacco and alcohol often act to inflame the eyes, especially the lining of the lids. Cigarette-smoke is said to be very hurtful to the eyes.

Those who use alcoholic drinks and tobacco often suffer from dim vision.

In brief, the eyes are like two precious gems, put in a carefully made case. We must see to it that we keep them safe and sound.

LESSON XLI.

HINTS FOR THE SICK-ROOM.

EVEN if you are children, you can learn the simplest things about the care of a sick-room. With skilful hands and willing hearts you can save many weary steps of older people. Let me give you a few hints.

The sick-room should be the lightest and most pleasant room in the house. Take away all extra carpets, upholstered furniture, heavy curtains, etc.: they absorb the impurities, and help keep the room foul. A clean floor, with a few rugs to deaden the footsteps, is much better than a woollen carpet.

Let the room be open to the sunlight and the fresh air. Do not let the noise of passing steam and horse cars, heavy teams, and playing children, annoy the sick person.

With a little pains any sick-room may be supplied with pure air. Do not let the smell of cooking victuals, especially frying fish or pork, cooking

cabbage, etc., reach the sick-room. Do not allow a kerosene light, with its flame turned down, to burn through the night.

Keep a sick-room neat and trim. Take away at once all offensive matters. Never allow such things to remain in the room. In many diseases, especially scarlet-fever, diphtheria, consumption, etc., use pieces of old linen instead of handkerchiefs, and burn them as soon as used. Carelessness or ignorance in this matter often spreads contagious disease.

Change the clothes of the bed and of the sick person quite often. Do not let such clothing be put away in a closet with other clothing.

Do not have a great show of bottles of medicine, spoons, glasses, etc.: keep all such things in the next room. Some simple thing like an orange, a few favorite flowers, and one or two playthings, may take their place.

Never get behind the door or in an adjoining room, and whisper. Whatever must be said, say it openly and aloud.

LESSON XLII.

A FEW SIMPLE RULES OF HEALTH.

READ some pleasant book, laugh, talk, sing, or otherwise rest, for half an hour before going to bed. Children should not play too hard for an hour before bed-time. Some kinds of food, or tea and coffee, may prevent sleep.

The skin takes in certain poisons, as lead, very easily. Cheap clothing, as colored stockings, is often dyed with lead. Hence such clothing should be thoroughly washed before it is worn.

Never put ear-picks, pins, hairpins, tooth-picks, and other things, into your ears. It is a foolish, needless, and dangerous practice.

Let the ear-wax alone: it will take care of itself. Diving into deep water often injures the ears. Do not ever shout suddenly into a person's ear.

Do not go to sleep with the head on the window-sill, or in any place that may expose the ear to cold or damp air.

Woollen clothing should be always worn next to the skin in winter. Do not leave off winter clothing too early in the spring, or take off your

Blackboard Work.

winter flannels on a warm day in early summer. Never sleep in the clothes that you wear during the day.

Do not wear scarfs, furs, and wraps around the neck. You are far more likely to catch cold.

The finger-nails should be trimmed once a week with scissors. Do not trim them to the quick, or scrape them with a penknife. Do not get into the foolish notion of biting your nails.

As you grow older, remember never to give paregoric or any kind of soothing-sirup to your younger brothers or sisters, whose crying may annoy you. Never give them, or take yourself, any unknown or unmarked medicine which you may find in the closet or elsewhere.

The hair should be often washed, combed, and brushed. Do not plaster down the hair with the various kinds of dressings. Keep the scalp neat and clean by washing and vigorous rubbing.

Children, and older people too, should never run out-doors without proper covering for the head. Always keep your feet warm and dry. Do not sit in a warm or crowded room with the air blowing on to you. Put on more clothing, change your seat, or even leave the room.

There are some kinds of hazardous sports and games in which young people should never indulge. What are they? Let me tell you. Boys should never walk on the hands, standing on the head, with the body in the air. Children should not whirl on one foot, or swing too long or too hard.

Writing Lesson.

Other silly habits, such as pulling the fingers to hear the joints "snap," or pushing the eyes to one side so as to "see stars," are attended with danger, and should be carefully avoided by sensible children.

OUTLINE FOR REVIEW.

HINTS FOR EVERY-DAY HEALTH.

1. *How to care for the teeth.*
2. *Hints for keeping good eyesight.*
3. *The sick-room, and how to keep it in good order.*
4. *Simple rules of health:—*

   About clothing.

   Care of the person.

   Other hints.

TEST QUESTIONS FOR REVIEW.

1. Give some hints about the care of the teeth.

2. Show how the eye is very delicate and sensitive.

3. How would you take good care of the eyes?

4. What is the effect of alcohol and tobacco upon the eyes?

5. How would you get a room ready for a sick person?

6. Why should the sick-room be kept neat and trim?

7. Give some hints about the care of the ears; of the finger-nails; of the hair.

8. Can you think of other hints about wearing clothing?

9. What care would you take about giving paregoric, or soothing-sirup, to young children?

10. What other simple rules of health can you think of which you have read of in this book, or been told about at home?

LESSON XLIII.

HOW ALL PARTS OF THE BODY WORK TOGETHER FOR ITS GOOD.

LIKE any other wonderful machine that is busy at work, our body must be watched over and protected. The more we study our bodily life, the better we understand how all its different parts work together for the common good. You know, if some one tickles your foot, even when you are asleep, that the muscles of your leg will pull it away. If some one happens to strike suddenly at your eye, the lids will shut to protect it.

Every child knows that when he pricks his finger with a needle, touches a hot stove, or has eaten unwholesome fruit as an unripe apple, he will suffer more or less of pain. What is this wonderful thing which governs every part of our body? What is it that warns us of danger, and controls every motion of our bodily life? It is the nervous system, by which we mean the brain, — the pulpy mass

inside of the skull, and the little white, glistening threads running out from it, called nerves.

The nervous system is like a complete telegraphic system. The brain is the main office; and the thousands of nerves branching off to all parts of the body are the telegraph-wires. Despatches are constantly being sent to the brain, to tell what is going on in various parts of the body. The brain on receiving the news at once sends back its orders as to what must be done; and the order flies through the nerves faster than it is possible for us to think.

Thus, if you put your hand accidentally on a hot stove, you would not be long in pulling it away. Yet really this is what happened: a message flashed along the nerves from your hand to the brain, "We are burnt!" The brain at once returned the message to the muscles, "Pull the hand away!" Then the muscles contracted, and the hand was removed.

More wonderful still! If we exert our will, or "make up our mind" as we call it, to write with a pen, to pick a flower, or to call the name of

some friend, we can do it. The mind or brain wills to do this or that thing. This mind, which feels and thinks, but which we cannot see, forms the real part of our being. It is the power to feel, to know, to reason, and to will, that makes us what we are.

When we stop to think about it, how wonderful it is! The all-wise Creator, in his goodness and wisdom, has given us bodies which, in the words of the Psalmist, are "fearfully and wonderfully made."

It has not been left to us to make this bodily machine of ours go, any more than the watch-maker leaves it to the owner of the watch to turn each wheel and move each spring. We take care of our watch, and make it go well, by winding it up regularly, and by having it well cleaned and kept in order.

God has given into our keeping this machine, — the body; and whether it goes well or ill, depends very much upon the care we take of it.

LESSON XLIV.

WHAT COMES AT LAST FROM DRINKING ALCOHOLIC LIQUORS.

THE brain, or the thinking part, is a most precious gift. We should strive to keep it healthy and vigorous. It is very unwise to do anything to injure it. And yet many do so. How? Why, by poisoning its delicate tissues with alcoholic drinks.

A part of the work of the brain and nerves, as you have learned, is to make the muscles act together in such a way that we can move our limbs as we wish. Alcohol poisons the brain and nerves, and causes them to lose their control over the muscles. The despatches sent along the nerve-wires, from the brain that is confused by strong drink, go astray. The speech is thick and the gait unsteady.

Now, you must know that the brain that is injured by alcohol loses its power to think clearly. It is more likely to think evil thoughts than good

thoughts. You have doubtless heard it said of some persons that they have weak wills, and of others that they have strong wills. A person with a weak will may be easily influenced to do what he knows to be wrong.

STRONG DRINK.	**1. Weakens the will.** **2. Causes loss of self-control.** **3. Changes a good man into a brute.** **4. Brings with it untold poverty, suffering and disgrace.** **5. Transmits its curse to innocent children.**

Blackboard Work.

Alcohol weakens the will by injuring the brain, which is the seat of the will. Slowly, but surely, the person injuring his brain with alcohol loses his self-control. This is the reason why so many cruel deeds and brutal crimes are done while men are under the influence of strong drink.

You will not be surprised now to know that

strong drink can change a good man into the worst brute in town. It can make him cruel to his wife and children, ready to let them starve or to sell their clothing to buy himself drink. The bodily and mental wrecks caused by alcoholic liquors meet our sight on every side. The world is full of them.

You would hardly think that men and women could ever fall so low. If these had known, before they first began to drink, that it is the nature of alcohol to make those who drink it want to keep drinking it until they are ruined by it, they would have been warned against drinking the first drop. But they thought they could take a little when they wanted to, and let it alone when they wanted to. This false idea has led many to drunkenness.

There comes a time in the life of every drunkard when he realizes that alcohol is ruining him and that he would be better off without it. But by that time it has made his will too weak to resist the continual craving for more alcohol, that the alcohol itself has caused.

What a sad fact it is, that the children of drinking parents very often inherit the craving for alcoholic

drinks, just as children frequently inherit the color of the hair and eyes and other features of their parents! With such children the danger of rousing the appetite for alcohol by taking a little beer, wine, or cider, is greater than with those who have no such inheritance.

Did you ever think what untold poverty, suffering, and disgrace are brought upon innocent people by those who use strong drinks? The bright, ambitious lad becomes a drunkard, and his parents go down to their graves broken-hearted. The prosperous mechanic dies a drunkard, and his once happy home is lost, and his wife and children are left to struggle with poverty and disgrace.

A little exposure, and the apparently robust business man dies suddenly from pneumonia. It is perhaps known to a few friends that he was a heavy drinker in secret. You must know that those who sap their health with alcohol have little strength to withstand any sudden illness.

Property of all kinds is mortgaged; household goods are sold for debt; wages and valuable time are lost to the workingman; sober and industrious

citizens are heavily taxed to support workhouses and jails, — all this, and a hundred-fold more is the price paid for the very common indulgence in alcoholic liquors by any people.

GOLDEN TEXTS.

Do not drink wine nor strong drink.— Leviticus x. 9.

Look not thou upon the wine when it is red.
— Proverbs xxiii. 31.

Woe unto him that giveth his neighbor strong drink.
— Habakkuk ii. 15.

Woe unto them that rise up early in the morning, that they may follow strong drink. — Isaiah v. 11.

For the drunkard and the glutton shall come to poverty.
— Proverbs xxiii. 21.

TEST QUESTIONS FOR REVIEW

1. Why is it very unwise to injure the brain?

2. How do many people injure their brains and nerves?

3. What is one part of the work of the brain and nerves? How does alcohol interfere with their work?

4. What can you say of the despatches sent out by the brain when it is confused by alcohol?

5. How does this affect the speech and the gait?

6. What can you say of a person's thoughts when his brain is injured by alcoholic drink?

7. What can you say of a person who has a weak will? How does alcohol affect the will?

8. What does a person lose when his brain is injured by alcohol?

9. Why does alcohol so often lead to wrong-doing?

10. How can strong drink change a man? What can it make him do?

11. What should such a person have known before he began to drink?

12. What false idea about drinking has led many to drunkenness?

13. Why does the drunkard not stop drinking when he finds that alcohol is injuring him?

14. What created the appetite he finds it so hard to resist?

15. What effect may the drinking habits of parents have upon their children?

16. Why should the children of drinking parents be especially careful never to touch alcoholic liquors?

17. In what other ways do the drinking habits of one person bring distress upon others?

18. How does alcohol unfit a person to bear sudden illness?

19. Tell about other evils that result from the practice of drinking alcoholic liquors.

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